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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/829,160	04/22/2004	Takamitsu Asanuma	110108.01	5738

25944 7590 01/25/2005

OLIFF & BERRIDGE, PLC  
P.O. BOX 19928  
ALEXANDRIA, VA 22320

EXAMINER
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NGUYEN, TU MINH

ART UNIT	PAPER NUMBER
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3748

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/829,160

Applicant(s)

ASANUMA ET AL.

Examiner

Tu M. Nguyen

Art Unit

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 April 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 09/904,875.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>102104</u> . | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. This application is a divisional of 09/904,875 filed on July 16, 2001. Overall, claims 1-3 are pending in this application.

#### *Drawings*

2. The formal drawings filed on April 22, 2004 have been approved for entry.

#### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seto et al. (Japan Publication 6-117221) in view of Hirota et al. (Japan Publication 6-159037).

As shown in Figures 1 and 9 and indicated in the translated Abstract, Seto et al. disclose a device for purifying the exhaust gas of an internal combustion engine, comprising:

- a NO<sub>x</sub> absorbent (20) arranged in the exhaust system, which carries a catalyst (an alkali metal) for absorbing and reducing NO<sub>x</sub> and an oxidation catalyst (platinum) to absorb oxygen in the exhaust gas, the catalyst absorbing NO<sub>x</sub> when the air-fuel ratio in the surrounding

atmosphere thereof is lean and releasing the absorbed NO<sub>x</sub> when the air-fuel ratio is stoichiometric or rich;

- a catalytic apparatus (17) for purifying NO<sub>x</sub> arranged in the exhaust system upstream of the NO<sub>x</sub> absorbent, the catalytic apparatus carries a catalyst (an alkali metal) for absorbing NO<sub>x</sub> when the air-fuel ratio in the surrounding atmosphere thereof is lean and releasing the absorbed NO<sub>x</sub> when the air-fuel ratio is stoichiometric or rich; and

- control means (50, 11) for making the air-fuel ratio in the catalytic apparatus (17) rich to release NO<sub>x</sub> therefrom and purify the released NO<sub>x</sub> by reduction, and making the air-fuel ratio in the NO<sub>x</sub> absorbent (20) rich to release oxygen from the oxidation catalyst and thus to cancel oxygen saturation or contamination on the oxidation catalyst of the NO<sub>x</sub> absorbent.

Seto et al., however, fail to disclose that the NO<sub>x</sub> absorbent also has a function of a particulate filter.

As shown in Figures 1 and 2, Hirota et al. teach that it is conventional in the art to use a particulate filter (10) which carries a NO<sub>x</sub> absorber (26) for absorbing and reducing NO<sub>x</sub>. As clearly illustrated in Figure 2, the particulate filter is a wall-flow device comprising a plurality of partition walls having pores, the partition walls carrying a NO<sub>x</sub> absorber (26) on the exhaust gas upstream side surface for absorbing and reducing NO<sub>x</sub>. A controller in Hirota et al. makes the air-fuel ratio in the particulate filter rich to release NO<sub>x</sub> and active-oxygen from the NO<sub>x</sub> absorber to purify the released NO<sub>x</sub> by reduction, and to oxidize the particulates trapped on the filter by the released active-oxygen. As indicated in the translated Abstract, the heating in the NO<sub>x</sub> releasing and reduction causes elevated temperature in the filter, which induces the trapped

Art Unit: 3748

soot to ignite easily. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have replaced the NOx absorbent in Seto et al. with the particulate filter taught by Hirota et al., since the use thereof would have reduced harmful soot emissions in the exhaust gas and saved fuel by inducing soot to combust at an earlier time.

#### ***Prior Art***

5. The IDS (PTO-1449) filed on October 21, 2004 has been considered. An initialized copy is attached hereto.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of five patents and one patent application: Dettling et al. (U.S. Patent 5,100,632), Sasaki et al. (U.S. Patent 5,937,639), Kubo et al. (U.S. Patent 6,539,709), Suga et al. (U.S. Patent 6,729,125), Araki et al. (Japan Publication 06-200741), and Deeba (U.S. Patent Application 2003/0115859 further disclose a state of the art.

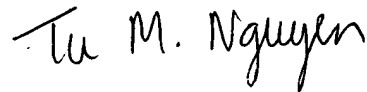
#### ***Communication***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Art Unit: 3748

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



TMN

Tu M. Nguyen

January 23, 2005

Primary Examiner

Art Unit 3748